Ming Tang

Seaborg Institute Postdoctoral Fellow
Science of Defects Team, Structure/Property Relations Group (MST-8),
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EDUCATION

- **Ph.D.** in Materials Engineering, August 2006
  New Mexico Institute of Mining and Technology
  Dissertation: *"Radiation Damage Effects in Rare-Earth Sesquioxides under Ion Irradiation"*,
  Academic Advisor: Dr. Ping Lu, Research Advisor: Dr. Kurt E. Sickafus

- **M.S.** in Materials Engineering, August 2003
  New Mexico Institute of Mining and Technology
  Thesis: *"Phase Transformation of Rare-Earth Sesquioxide Dy_2O_3 under Heavy Ion Irradiation",*
  Academic Advisor: Dr. Ping Lu, Research Advisor: Dr. Kurt E. Sickafus

- **B.S.** in Electronic Engineering, July 1990
  East China University of Science and Technology, Shanghai, China

HONORS AND AWARDS

- The Seaborg Institute Postdoctoral Fellow at LANL 2006

- The NM American Ceramic Society graduate scholarship 2006

- Paige Ashman Memorial Award, New Mexico Institute of Mining and Technology 2005

- The Best Young Ten Engineers, Nanjing Chemical Industry Corporation 1994

PROFESSIONAL EXPERIENCE

■ **Seaborg Institute Postdoctoral Fellowship**: MST-8 Structure/Property Relations Group, Materials Science and Technology Division, Los Alamos National Laboratory, NM. (09/2006 – present)

■ **Graduate Research Assistant**: MST-8 Structure/Property Relations Group, Materials Science and Technology Division, Los Alamos National Laboratory, NM. (05/2005 – 08/2005)

■ **Graduate Research Assistant**: Department of Materials Engineering, New Mexico Institute of Mining and Technology, NM. (01/2001 – 08/2006)

■ **Chemical Engineer**: Nanjing Chemical Industry Corporation, Nanjing, China. (1990-2000)

PROFESSIONAL SOCIETIES

■ Materials Research Society (MRS)
■ The Minerals, Metals, and Materials Society (TMS)
■ The American Ceramic Society (Acers)

REFEREE

Journal of Nuclear Materials, Journal of Applied Physics, Physical Review B

RESEARCH INTERESTS

■ Ion irradiation damage effects in ceramic materials (rare-earth sesquioxides Dy_2O_3, Er_2O_3, and Lu_2O_3; spinel $MgAl_2O_4$, $MgGa_2O_4$; δ-$Sc_4Zr_3O_{12}$; ZrO_2; Al_2O_3; Y_2O_3. Especially ion irradiation-induced phase transformations in rare-earth sesquioxides Dy_2O_3, Er_2O_3, and Lu_2O_3.

■ Radiation tolerance study on Actinide oxides (from $Y_6U_1O_{12}$ to $Y_4U_3O_{12}$)

■ Radiation tolerance study on bulk nano-phase ceramic materials (such as:$MgGa_2O_4$)

■ Ion beam synthesis and luminescence characterization of nanophosphors (such as: Eu:Y_2O_3)

■ Coulomb Mechanisms for Ion Damage in Insulators in the Electronic Stopping Regime

TECHNICAL SKILLS

■ **TEM analysis**: Philips CM-30 Analytical Electron Microscope, JEOL-3000F High-Resolution Electron Microscope, Tecnai F30 Analytical TEM/STEM (Los Alamos National Laboratory), JEOL-2010 High-Resolution Analytical Electron Microscope (University of New Mexico), Hitachi H-9000NAR (Argonne National Lab).

■ **TEM sample preparation**: Experience working with cross-sectional and plain-view TEM sample preparation of various materials.

■ **XRD**: grazing incidence X-ray diffraction (Bruker AXS D8 Advanced X-ray diffractometer, Los Alamos National Laboratory), powder X-ray diffraction (Rigaku Geigerflex)

■ **SEM**: JEOL 6300FXV High-Resolution SEM, Hitachi S-800 Field Emission Scanning Electron Microscope (FESEM)

■ **Scientific software**: (Gatan) Digital micrograph, Adobe Photoshop, Xtaldraw, CrystalMaker, ORIGIN, KaleidaGraph, Matlab, SRIM

■ **Material processing**: ceramic materials synthesis, Ion Implantation (Varian Model DF-3000 Production Ion Implanter 200 kV, Los Alamos National Laboratory)

LIST OF PUBLICATIONS

■ **M. Tang,** P. Lu, J.A. Valdez and K.E. Sickafus**,** "Order-disorder phase transformation in ion–irradiated rare earth sesquioxides", Applied Physics Letters, submitted (2007).

■ Tong D. Shen, Shihai Feng, **Ming Tang**, James A. Valdez, Yongqiang Wang, Blas P. Uberuaga and Kurt E. Sickafus, "Nanocrystalline materials: enhancing radiation tolerance", Nature, submitted (2007).

■ **M. Tang,** P. Lu, J.A. Valdez and K.E. Sickafus**,** "Irradiation-Induced Order-to-Disorder Phase Transformation at Different Temperatures in Dy_2O_3", JOM, submitted (2007).

■ Kurt E. Sickafus, James A. Valdez, Antony Cleave, **Ming Tang**, Manabu Ishimaru, Siobhan M. Corish, Robin W. Grimes, Christopher R. Stanek, Blas P. Uberuaga, "Radiation Tolerance in Structurally-related Oxides", Nature Materials, in press (2007).

■ **M. Tang,** P. Lu, J.A. Valdez, C.R. Stanek, and K.E. Sickafus**, "**The Order-Disorder Phase Transformation in Ion-Irradiated Rare Earth Sesquioxide, Dy_2O_3", Physica Status Solidi, in press (2007).

■ Kurt E. Sickafus, Robin W. Grimes, Siobhan M. Corish, Antony R. Cleave, **Ming Tang**, Christopher R. Stanek, Blas P. Uberuaga, James A. Valdez, "Layer Atom Arrangements in Complex Materials", LA-14205, http://www.doe.gov/bridge, U.S. Department of Energy (2006).

■ **M. Tang,** P. Lu, J.A. Valdez and K.E. Sickafus**, "**Heavy Ion Irradiation Effects on Rare Earth Sesquioxides Dy_2O_3", Nuclear Instruments & Methods in Physics Research B, **250** (2006) 142-147.

■ J.A. Valdez, **M. Tang,** and K.E. Sickafus, "Radiation damage effects in δ-$Sc_4Zr_3O_{12}$ irradiated with Kr^{++} ions under cryogenic conditions", Nuclear Instruments & Methods in Physics Research B, **250** (2006) 148-154.

■ **M. Tang**, P. Lu, J.A. Valdez and K.E. Sickafus, "Heavy Ion Irradiation Induced Phase Transformation in Polycrystalline Dy_2O_3", Philosophical Magazine, **86** [11] 2006 (1597-1613).

■ **M. Tang**, P. Lu, J.A. Valdez and K.E. Sickafus, "Irradiation-Induced Phase transformations in Rare Earth Sesquioxides (Dy_2O_3, Er_2O_3, Lu_2O_3)**,"** Journal of Applied Physics, **99** [6] 2006.

■ D.W. Cooke, J-K. Lee, B.L. Bennett, J.R. Groves, L.G. Jacobsohn, E.A. McKigney, R.E. Muenchausen, M. Nastasi, K.E. Sickafus, **M. Tang**, J.A. Valdez, "Luminescent properties and reduced dimensional behavior of hydrothermally prepared Y_2SiO_5:Ce nanophosphors", Applied Physics Letters, **88** [10] 2006.

■ J. Qian, C. Pantea, Z. Zhong, L.L. Daemen, Y. Zhao, **M. Tang**, T. Uchida, Y. Wang, "Yielding strength of alpha-silicon nitride under high pressure-high temperature," Journal of the American Ceramic Society **88** [4] (2005) 903-906.

■ **M. Tang**, J.A. Valdez, P. Lu, G.E. Gosnell, C. J. Wetteland, and K.E. Sickafus, "A Cubic-to-Monoclinic Structural Transformation in the Sesquioxide Dy_2O_3 Induced by Ion Irradiation," Journal of Nuclear Materials **328** (2004) 71-76.

■ J.A. Valdez, **M. Tang**, Z. Chi, K.E. Sickafus, "Characterization of an ion irradiation induced phase transformation in monoclinic zirconia," Nuclear Instruments & Methods in Physics Research B **218** (2004) 103-110.